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JC926 U.S. PTO

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**PATENT APPLICATION TRANSMITTAL LETTER**  
(Large Entity)

Docket No.  
INTL-0455-US (P9809)

TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

**ROLAND M. MORLEY**

For: **DUAL CHANNEL IMAGING DEVICE**

Enclosed are:

- ☒ Certificate of Mailing with Express Mail Mailing Label No. **EL445651492US.**
- ☒ **One (1)** sheets of drawings.
- ☐ A certified copy of a \_\_\_\_\_ application.
- ☒ Declaration ☒ Signed. ☐ Unsigned.
- ☒ Power of Attorney
- ☐ Information Disclosure Statement
- ☐ Preliminary Amendment
- ☒ Other: **Recordation Form Cover Sheet; Assignment and check for \$40.**

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09/652431  
08/31/00

**CLAIMS AS FILED**

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	24	- 20 =	4	x \$18.00	\$72.00
Indep. Claims	3	- 3 =	0	x \$78.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$690.00
TOTAL FILING FEE					\$762.00

- ☒ A check in the amount of **\$762.00** to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **20-1504** as described below. A duplicate copy of this sheet is enclosed.
  - ☐ Charge the amount of \_\_\_\_\_ as filing fee.
  - ☒ Credit any overpayment.
  - ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
  - ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: **August 31, 2000**

  
Signature  
**Timothy N. Trop, Reg. No. 28,994**  
**TROP, PRUNER & HU, P.C.**  
**8554 Katy Freeway, Suite 100**  
**Houston, Texas 77024**  
**Phone: (713) 468-8880**  
**Fax: (713) 468-8883**

cc:

Customer No. 21906

INTL-0455-US  
(P9809)

**APPLICATION**

**FOR**

**UNITED STATES LETTERS PATENT**

**TITLE: DUAL CHANNEL IMAGING DEVICE**

**INVENTOR: ROLAND M. MORLEY**

Express Mail No.: EL445651492US

Date: August 31, 2000

001500" T6425560

DUAL CHANNEL IMAGING DEVICE

Background

This invention relates generally to imaging devices and particularly to optical systems for imaging devices.

5 A wide variety of imaging devices are available including cameras, telescopes and microscopes as examples. In many cases, an imaging array is integrated with these optical devices to record an image produced by the optical device.

10 Sometimes a zoom lens is provided to enable different fields of view. For example, a narrow field of view and a wide field of view may be obtained by the same zoom lens. Thus, the zoom lens may selectably produce an image with a narrow or wide field of view. The image from the zoom lens may be captured by an imaging array at the same time it is  
15 viewed by the user through a viewfinder.

20 However, the use of a zoom lens results in substantially increased cost for the imaging device. This is because of the relative cost of the zoom lens compared to fixed field of view lenses. Zoom lenses are more expensive to manufacture because there are optical moving parts that may increase the need for precision components and mounting surfaces.

Thus, there is a need for an imaging device which provides for different fields of view without incurring the cost of a zoom lens.

#### Brief Description of the Drawing

5           Figure 1 is a schematic depiction of one embodiment of the present invention.

#### Detailed Description

Referring to Figure 1, an imaging device 10 may be a digital camera, a telescope, a microscope or other imaging device. The viewer, indicated as E, views the received images through an eyepiece 32 that may be part of a direct viewfinder. A focus screen 30 receives an image from a relay lens 28.

Two different optical paths N and W are utilized in accordance with one embodiment of the present invention. However, in other cases, more than two optical paths may be utilized.

The first optical path N includes an optical system 36 having a shutter 12, an adjustable focus, relatively narrow field of view lens 14, and a mirror 16. Instead of using a spherical lens as the lens 14, other optical devices including a flat or Fresnel lens may be utilized. A fixed or adjustable focus manual lens may be used as the lens 14. If an adjustable focus lens is used, it may be a manual or autofocus lens.

5 The lens 14 provides a relatively narrow field of view and may be moved along the optical path N to adjust its focus. The image from the lens 14 is reflected by the mirror 16 to an infrared (IR) filter 22 and an imaging array 20.

10 While a digital imaging array 20 is illustrated, any recording media may be utilized including conventional film. The imaging array 20 may, for example, be a complementary metal oxide semiconductor (CMOS) sensor or a charge coupled device (CCD) sensor, as two examples.

15 A second optical path W includes an optical system 38 having a shutter 24, a relatively wide field of view lens 26 and a beamsplitter 18. A fixed or adjustable focus manual lens may be used as the lens 26. If an adjustable focus lens is used, it may be a manual or autofocus lens. When the shutter 24 is passing light, the optical path W provides light that is reflected by the beamsplitter 18 to the imaging array 20. The beamsplitter 18 may be a parallel plate or cubic beamsplitter as two examples.

20 In one embodiment of the present invention, only one of the paths N or W is active at any one time. That is, the state of the shutters 12 and 24 may be controlled by a control device 34 that may receive user inputs. The user may select either a narrow or a wide field of view. If the user  
25 selects a narrow field of view, the shutter 12 in the optical path N is opened and conversely if the user selects a wide

field of view, the shutter 24 in the optical path W is opened. However, in one embodiment, only one of the shutters 12 or 24 is opened or passing light at any given time.

5 The active light path N or W provides light not only to the imaging array 20 but also to the eyepiece 32 for viewing by the user. In the case of the light path N, light is reflected by the beamsplitter 18 to the eyepiece 32. In the case of the light path W, light is passed by the beamsplitter 18 to the eyepiece 32. The beamsplitter 10 32 may pass 50% of the incident light in one embodiment of the invention.

The screen 30 may be used in a manual focus system. The lenses 28 and 32 adjust the resulting image for viewing by the user's eye E.

15 Thus, a dual channel system enables the user to select either a narrower or wider field of view. The images captured through the selected optical path may be recorded on the imaging array 20 while being viewed through the eyepiece 32. In this way, a selectable field of view may 20 be obtained without the need for a zoom lens. In particular, a narrower or wider field of view may be selected without the need for moving lenses or optical systems in some embodiments.

As an example, the imaging device 10 may be a camera 25 and the lens 14 may be a macro lens for close-up viewing and the lens 26 may be a conventional lens. As another

example, one of the lenses 14 or 26 may have a different magnification than the other lens 14 or 26. Whichever optical system 36 or 38 is selected, the captured image is available for viewing by the user indicated at E at the same time.

While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of this present invention.

What is claimed is:

1           1'.   An imaging device comprising:  
2                an imaging array;  
3                a first optical system to selectively provide an  
4   image to said array;  
5                a second optical system to selectively provide an  
6   image to said array; and  
7                an eyepiece to view the image selectively  
8   provided to said array from one of said first or second  
9   optical systems.

1           2.    The imaging device of claim 1 wherein said  
2    imaging device is a camera.

1           3.    The imaging device of claim 1 wherein said  
2    imaging device is a microscope.

1           4.    The imaging device of claim 1 wherein said  
2    imaging device is a telescope.

1           5.    The imaging device of claim 1 wherein said  
2    imaging array is a digital sensor.

1           6.    The imaging device of claim 1 wherein said first  
2    optical system includes a shutter and said second optical  
3    system includes a shutter.



1           7.    The imaging device of claim 6 wherein said  
2    shutters are controlled so that only one of said shutters  
3    is open at a time.

1           8.    The imaging device of claim 7 wherein a  
2    controller enables the user to select one of said shutters  
3    to pass light.

1           9.    The imaging device of claim 8 including a  
2    beamsplitter that causes light from each optical system to  
3    be passed both to the imaging array and said eyepiece.

1           10. The imaging device of claim 1 wherein said first  
2   optical system includes a lens with a narrower field of  
3   view and said second optical system includes a lens with a  
4   wider field of view.

1           11. The imaging device of claim 1 wherein said first  
2   optical system includes a first lens and said second  
3   optical system includes a second lens, said first lens  
4   having a higher magnification than said second lens.

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1      12. A method comprising:
2          providing a first image to an imaging array along
3      a first light path;

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1           19. The method of claim 12 including splitting the  
2 light from each of said paths to cause part of the light to  
3 go to said imaging array and part of said light to go to  
4 said eyepiece.

1           20. A camera comprising:  
2               a first optical path having a lens with a first  
3 field of view;  
4               a second optical path including a lens with a  
5 second field of view different from said first field of  
6 view;  
7               an image capture device to selectively receive an  
8 image from one of said first and second optical paths; and  
9               an eyepiece to display the image received by said  
10 image capture device.

1           21. The camera of claim 20 wherein said first optical  
2 path includes a shutter and said second optical path  
3 includes a shutter.

1           22. The camera of claim 21 wherein said shutters are  
2 controlled so that only one of said shutters is open at a  
3 time.



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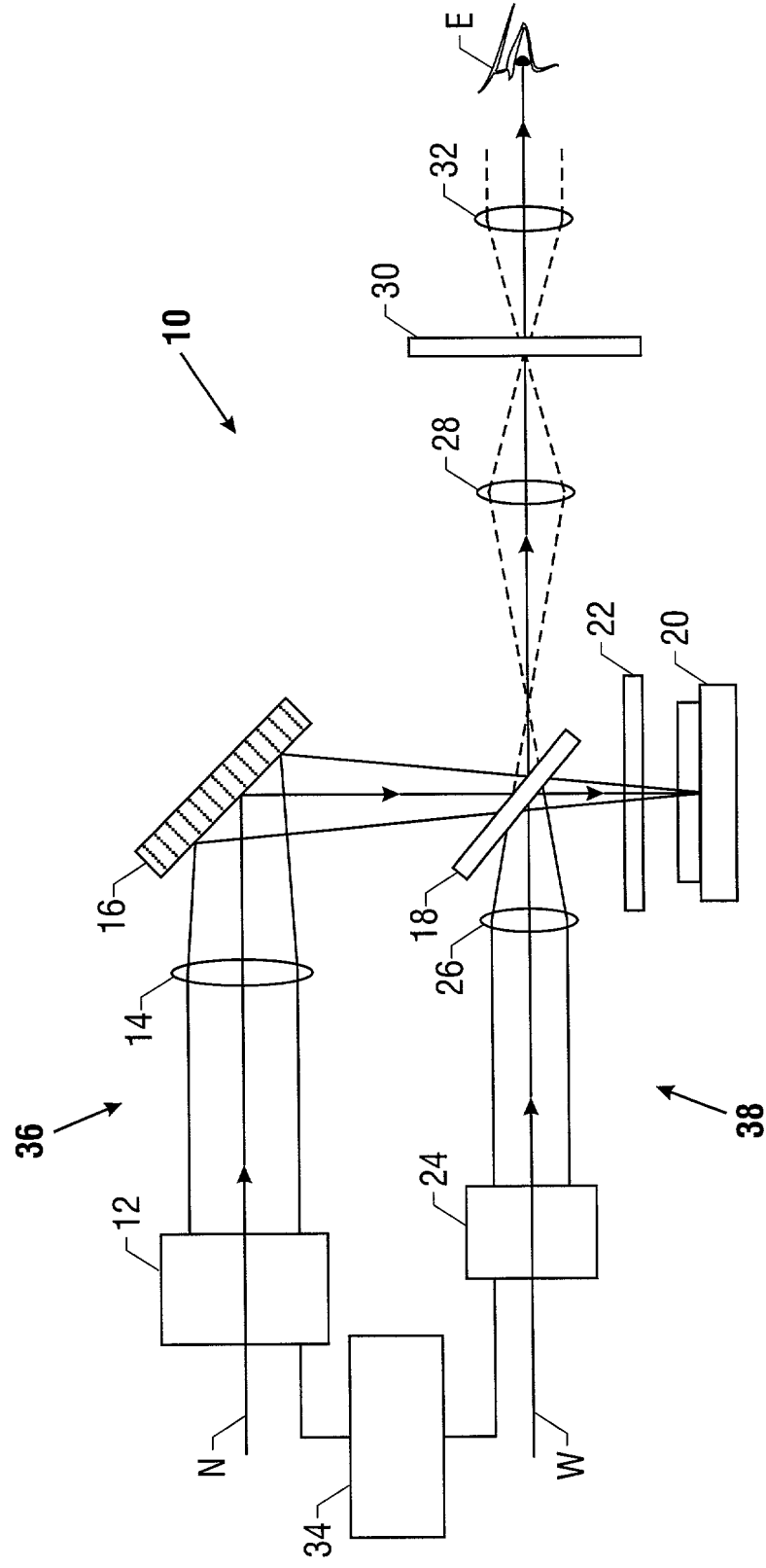


FIG. 1

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

## DUAL CHANNEL IMAGING DEVICE

the specification of which

X	is attached hereto.
	was filed on _____ as
	United States Application Number _____
	or PCT International Application Number _____
	and was amended on _____
	(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
Number	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under title 35, United States Code, Section 119(e) of the United States provisional application(s) listed below:

_____ (Application Number)	_____ (Filing Date)
_____ (Application Number)	_____ (Filing Date)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

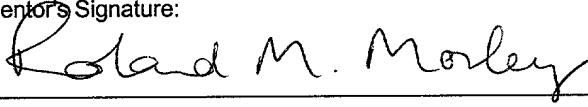
_____ (Application Number)	_____ Filing Date	_____ (Status-patented, pending, abandoned)
_____ (Application Number)	_____ Filing Date	_____ (Status-patented, pending, abandoned)

I hereby appoint Timothy N. Trop, Reg. No. 28,994; Fred G. Pruner, Jr., Reg. No. 40,779 and Dan C. Hu, Reg. No. 40,025 my patent attorneys, of TROP, PRUNER & HU, P.C., with offices located at 8554 Katy Freeway, Ste. 100, Houston, TX 77024, telephone (713) 468-8880, and Mirho, Charles A.; Registration No. 41,199; Novakoski, Leo V.; Registration No. 37,198; Reynolds, Thomas C.; Registration No. 32,488; Seddon, Kenneth M.; Registration No. 43,105; Seeley, Mark; Registration No. 32,299; Skabrat, Steven P.; Registration No. 36,279; Skaist, Howard A.; Registration No. 36,008; Su, Gene I.; Registration No. 45,140; Wells, Calvin E.; Registration No. 43,256; Werner, Raymond J.; Registration No. 34,752; Winkle, Robert G.; Registration No. 37,474; and Young, Charles K.; Registration No. 39,435 my patent attorneys, of INTEL CORPORATION with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to Timothy N. Trop, TROP, PRUNER & HU, P.C., 8554 Katy Freeway, Ste. 100, Houston, TX 77024 and direct telephone calls to Timothy N. Trop, (713) 468-8880.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



Full Name of Sole/First Inventor: <b>ROLAND M. MORLEY</b>	
Inventor's Signature: 	Date: 8/29/00
Residence: <b>TEMPE, ARIZONA</b>	Citizenship: <b>U.S.</b>
Post Office Address: <b>401 E. DEL RIO DRIVE, TEMPE, ARIZONA 85282</b>	

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